

IN THE SPECIFICATION

Please replace paragraphs [0004], [0006], and [0021] with the following paragraphs:

[0004] Typically, for example as seen in Figs. 1a and 1b, a substrate 10 has pairs of pads 12 to which terminals 14 of SMT components, such as die side capacitor or ~~[DSC]~~ (DSC) 16, can be mounted. Solder resist 15 is disposed between the two pads 12. Asymmetrical, lateral, surface-tension forces due to uneven surface tension of solder deposits 22 on the pads 12 during soldering can cause the DSC 16 to either shift, as seen in Fig. 1a, or tombstone, as seen in Figs. 1b. Fig. 1a shows a top view of DSC 16 as having shifted away from one of the substrate pads 12 to cover an adjacent substrate pad, while Fig. 1 b shows a side view of DSC 16 as having tombstoned. Flipping, shifting and/or tombstoning of SMT components will be referred to herein as SMT component defects or SMTC defects. The tombstoning effect is considered a common soldering defect in the mounting of SMT components, and is caused by a combination of the surface tension of the solder, the SMT component's weight, and the soldering conditions. Another factor contributing to SMTC defects may include a vibration of the conveyor belt transporting the SMT component during soldering. SMTC defects having been observed at assembly sites especially recently with respect to DSCs whose dimension and weight have been reduced from 0805 (this terminology means that the components that have a length of 8 mil. and a width of 5 mil.) and 0402 to 0201. Because of the relatively small dimensions and weights of 0402 and 0201 components, the intricate balance of the surface tension may be more easily disturbed by either the change of the solderability of the components or by the differences of time at which the solder paste at each end of the component begins to melt.

[0006] An alternative measure used in the prior art in order to reduce the occurrence of SMTC defects contemplates using an adhesive to hold the capacitor in place during soldering of a pre-mount combination 1 as shown. In such a method, as seen in Fig. [8]Z, where like components are referred to using like reference numerals with respect to Figs. 1a and 1b described above, an adhesive is dispensed on the solder resist 15 between the two substrate pads 12 as shown. The adhesive is meant to hold the capacitor in place during soldering in an attempt to reduce SMTC defects. However, disadvantageously, as SMT component sizes shrink, as noted in the paragraph above, use of the adhesive method becomes ill suited to combat SMTC defects to the extent that it among others requires an accurate placement of the adhesive and an accurate dispensing of the same, which become more difficult where small spaces/doses are involved, often requiring a fine tuning of the adhesive dispensing machine. For the reasons stated above, and for other reasons stated below which will become apparent to those skilled in the art upon reading and understanding the present specification, there is a significant need in the art for methods for mounting components to a substrate that offer relatively high density and high quality interconnections at a reasonable production cost.

[0021] Referring to Figs. 2a and 2b, a pre-mount combination 100 is shown prior to and during reflow, respectively. Combination 100 as shown includes a substrate 110 having bonding pads 112 on a bonding surface 113 thereof, and including a solder resist 115 thereon. The shown bonding pads 112 may comprise ~~[ENIG]~~ Electroless Nickel/Immersion Gold (ENIG) bonding pads. As is well known in the art, an ENIG bonding pad may be made by providing copper pads using methods well known by those versed in the art. The copper bonding pads may then be put into the proper nickel containing bath for a predetermined length of time to deposit a specific range of nickel thickness by electrochemical means. After proper rinsing, the bonding

pads may then be put into a gold containing electrochemical bath where the gold atoms spontaneously replace the surface nickel atoms until the entire nickel surface areas are covered by gold. A result of the above well known process are bonding pads such as bonding pads 112, which include a copper layer 112', a nickel layer 112" thereon, and a gold layer 112''' covering the nickel layer. Gold has long been used in the electronics industry as a metal for contact surfaces because of its low electrical resistivity and its inertness to attack by corrosive substances. Combination 100 as shown further includes a surface mount component such as DSC 116 having terminals 114. DSC 116 includes a magnetic layer 118 provided on a die-side surface 120 thereof.